

## WHAT IS CLAIMED IS:

- 1           1. A method of expressing a movement of a crowd made up  
2 of a plurality of individuals in an information processing  
3 apparatus, said method comprising the steps of:  
4           obtaining the number of individuals which form a crowd at  
5 time  $t$  and the position of each individual, and assigning a  
6 position to each individual in the crowd at the next time  $t + 1$  in  
7 accordance with a predetermined arrangement rule;  
8           determining a destination direction with regard to a  
9 reference point of the crowd, determined by the positions of the  
10 individuals which form the crowd at time  $t$ ; and  
11           determining the position at the next time  $t + 1$  according to  
12 the position assigned by said arrangement process and said  
13 destination direction.
- 1           2. A program which causes an information processing  
2 apparatus to execute:  
3           an arranging process for obtaining the number of  
4 individuals which form a crowd at time  $t$  and the position of each  
5 individual, and assigning a position to each individual in the  
6 crowd at the next time  $t + 1$  in accordance with a predetermined  
7 arrangement rule;

8 a process for determining a destination direction with  
9 regard to a reference point of the crowd, determined by the  
10 positions of the individuals which form the crowd at time  $t$ ; and  
11 a process for determining the position at the next time  $t + 1$   
12 according to the position assigned by said arrangement process  
13 and said destination direction.

1 3. An information processing apparatus comprising:  
2 arranging means for obtaining the number of individuals  
3 which form a crowd at time  $t$  and the position of each individual,  
4 and assigning a position to each individual in the crowd at the  
5 next time  $t + 1$  in accordance with a predetermined arrangement  
6 rule;  
7 means for determining a destination direction with regard  
8 to a reference point of the crowd, determined by the positions of  
9 the individuals which form the crowd at time  $t$ ; and  
10 means for determining the position at the next time  $t + 1$   
11 according to the position assigned by said arrangement process  
12 and said destination direction.

1 4. A program for displaying, on a display apparatus, a  
2 moving image of a plurality of characters which move in a  
3 virtual space, said program causing an information processing  
4 apparatus to execute:  
5 a mode determination process for determining whether each

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6 character should operate as an individual or as a crowd;  
7 a virtual object creation process for specifying a group of  
8 characters which form the crowd and creating a virtual object  
9 which gives movement information about movement to the group  
10 of characters when it is determined that each character should  
11 operate as part of a crowd; and  
12 a crowd movement process for causing the group of  
13 characters to move on the basis of said movement information.

1 5. A program according to claim 4, wherein said movement  
2 information contains information about a character assignment  
3 position in a virtual space and information about the destination  
4 direction of the virtual object.

1 6. A program according to claim 5, which further causes  
2 said information processing apparatus to execute an operator  
3 character display process for displaying, on a display screen of  
4 the display apparatus, a moving image of an operator character  
5 which moves in a virtual space in accordance with the operation  
6 of an operator, which is received via an operation apparatus,  
7 wherein the destination direction of said virtual object is a  
8 direction in which said operator character in the virtual space is  
9 chased.

1 7. A program according to claim 4, which further causes

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2 said information processing apparatus to execute;

3 a character movement process for causing a character to  
4 move in the virtual space when it is determined in said mode  
5 determination process that the character should move as an  
6 individual;

7 a character search process for determining whether or not  
8 another character is present within an area of a predetermined  
9 range corresponding to the position of the character in the  
10 virtual space; and

11 a crowd forming process for causing the character to act so  
12 as to form a crowd together with said other character when it is  
13 determined that the other character is present.

1 8. A program according to claim 5, wherein the character  
2 assignment position in said virtual space is a position in one  
3 circle or in a plurality of concentric circles, around a reference  
4 point determined based on the positions of the group of  
5 characters which form a crowd, and the characters in the same  
6 circle are evenly spaced apart.

1 9. A recording medium, readable by said information  
2 processing apparatus, having recorded therein said program  
3 according to any one of claims 2, 4, 5, 6, 7, and 8.